STANDARDS DEVELOPMENT
RTCA DOCUMENTS

User Requirements for Future Communications, Navigation, and Surveillance Systems, Including Space Technology Applications (RTCA/DO-193) - September 1986

Report of Special Committee 159 on Minimum Aviation System Performance Standards (MASPS) for Global Positioning System (GPS) (RTCA/DO-202) - November 1988

Minimum Operational Performance Standards for Airborne Supplemental Navigation Equipment Using Global Positioning System (GPS) (RTCA/DO-208) -July 1991

Minimum Aviation System Performance Standards DGNSS Instrument Approach System: Special Category I (SCAT-l) (RTCA/DO-217) - August 1993

STANDARDS DEVELOPMENT
RTCA DOCUMENTS (cont'd)

Minimum Operational Performance Standards (MOPS) for Global Navigation Satellite Systems (GNSS) Airborne Antenna Equipment (RTCA/DO-228) - October 1995

Minimum Operational Performance Standards for Airborne Equipment Using Global Positioning System/Wide Area Augmentation System (RTCA/DO-229) - January 1996

Assessment of Radio Frequency Interference Relevant to the GNSS (RTCA/DO-235) - January 1997

RTCA SC-I 59 ACTIVITIES

LAAS MASPS - PMC MAY 1998

LAAS MOPS - JUL 1998

LAAS Ground Specification - DEC 1998

WAAS Precision - APR 98

Surface Applications Report - APR 1998

STANDARDS DEVELOPMENT
ITU-R RECOMMENDATIONS

ITU-R M.823-1 Technical Characteristics of Differential Transmissions for Global Navigation Satellite Systems (GNSS) from Maritime Radio Beacons in the Frequency Band 283.5 - 315 kHz in Region 1 and 285 - 325 kHz in Regions 2 and 3

ITU-R M.1088 Considerations for Sharing with Systems of Other Services Operating in the Bands Allocated to the Radionavigation-Satellite Service

ITU-R M.1317 Considerations for Sharing Between Systems of Other Services Operating in Bands Allocated to the Radionavigation-Satellite and Aeronautical Radionavigation Services and the Global Navigation Satellite System (GLONASS-M)

ITU-R M.1318 Interference Protection Evaluation Model for the Radionavigation-Satellite Service in the 1559 - 1610 MHz Band

ITU-R M.1318 Model for the Evaluation of Radionavigation-Satellite Interference Levels

	Desired Signal	nterference ignal	Comments
ı) Minimum Satellite Signal Level Specified at Receiving Antenna's Surface (dB W)	160 dBW		For GPS.
›) Interference-to-Carrier Specified for receiver per bandwidth (dB/MHz or kHz)	24 dB/MHz		Receiver rated maximum value of nterference-to-carrier ratio allowed and still meet performance requirements for tracking.
:) Allowable Interference at receiver (dBm/MHz)		-136 dBW/MHz	Maximum allowed interference level based on specified RF signal level at or near the Earth's surface and receiver interference-to-carrier ratio specification at interference BW.
d) Antenna Gain Difference (dB)		-5.5 dB	The difference in antenna gain towards the desired satellite signal (-4.5dB) and the interference signal (-10dB).
e) Allowable Interference Signal at Antenna's Surface		-130.5dBW/MHz	Maximum interference density allowed at the antenna's surface.
f) Nominal Path Loss Between Antenna and Interference Source		66.1 dB	Propagation loss between receiver antenna and interference source. 20*Log(frequency MHz) + 20*Log(D)-27.56 (D=distance in meters).
g) Extra Margin of Protection		5.6 dB	Extra margin to ensure protection against factors like multipath.
h) Multiple Interference Source Factor		0.0 dB	If there is a potential for more than one source of interference at about the same time, an allowance should be made for aggregate interference.
i) Interfering Emission in the RNSS bandwidth at the Distance Specified		-70 dBW/MHz	If this power density is exceeded at the specified distance, further analysis is required.

GLOBAL NAVIGATION SATELLITE SYSTEM
RF INTERFERENCE ISSUES

From Mobile-Satellite Earth Stations in Bands

- **1610 - 1626.5 MHz, 1626.5 - 1660.5 MHz, 1559 - 1567 MHz**

From Fixed Services in the 1559 - 1610 MHz Band

- **Allowed in 44 Countries on Primary Basis**
- **Allowed in 26 Counties on Secondary Basis**

From Other Sources

- **TV Stations**
- **VHF Stations**
- **FM Stations**
- **Pulsed Stations**
- **Other Mobiles**